



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,409	03/26/2004	Toru Tojo	251154US2SRDX	7571
22850	7590	03/28/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER AKANBI, ISIAKA O	
			ART UNIT	PAPER NUMBER
			2886	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/28/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/28/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/809,409

Applicant(s)

TOJO ET AL.

Examiner

Isiaka O. Akanbi

Art Unit

2886

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-12 and 14-21 is/are rejected.
- 7) ☒ Claim(s) 5 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Amendment

The amendment file 15 February 2007 has been entered into this application.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 February 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 8-9, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf et al. (6,930,770 B2).

Claims 1, 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf. The reference of Elyasaf teaches of a pattern inspection apparatus to inspect defects of a substrate, comprising an illumination optics (16/22/59), which applies a first inspection light (15) of a predetermined wavelength to a surface opposite to a pattern formed surface of the substrate. 1a), and applies a second inspection light (17) whose wavelength equal the predetermined wavelength of the first inspection light to the pattern formed surface (9), a detector (32/34) which selectively detects a transmitted light through the substrate by irradiation of the first inspection light and a reflected light from the substrate by irradiation of the second inspection light so as to perform a transmitted-light-based inspection and a reflected-light-based

inspection and a space separation mechanism (30) which is provided and directionally separates an irradiation beam of the first inspection light (15) and the second inspection light (17) such that the transmitted light through the substrate and the reflected light from the substrate are imaged in two discrete areas (32/34) separated on the optical focal plane (fig. 1a)(col. 1, line 11-41). The reference of Elyasaf is silent regarding the position of the space separation mechanism as being (i.e. in the vicinity of an optical focal plane toward the pattern formed surface of the substrate), however it would have been obvious to one having ordinary skill in the art at the time of invention to place a space separation mechanism in an appropriate position (i.e. in the vicinity of an optical focal plane toward the pattern formed surface of the substrate) where it will adequately divide the beam with accuracy.

As to claims 6 and 14, Elyasaf discloses everything claimed, as applied to claims 1 and 9 above, in addition Elyasaf discloses wherein the optical focal plane toward the pattern formed surface of the substrate at least a magnification focal plane of an observation field observed in the pattern formed surface, and a mirror (30) is used as the space separation mechanism, and the mirror is fixed at a position offset from the optical focal plane (fig. 1a).

As to claims 8, 16 and 21, Elyasaf discloses everything claimed, as applied to claims above, in addition Elyasaf discloses wherein the illumination optics (16/22/59) has a single light source (12).

As to claims 4 and 12, Elyasaf discloses everything claimed, as applied to claim above, in addition Elyasaf discloses illumination optics (16/20/24) has a polarizing beam splitter provided between the pattern formed surface of the substrate (8) and the space separation mechanism (30), and the polarizing beam splitter (24) reflects the second inspection light to lead the second inspection light to the pattern formed surface of the substrate, and lets the transmitted light through the substrate and the reflected light from the substrate pass through.

Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf et al. (6,930,770 B2) in view of Murakami et al. (5,017,798)

Claims 2, 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf in view of Murakami, as applied to claims above. The reference of Elyasaf teaches of the features of claim 1, comprising detection optics (36/24/26/28/30)(fig. 1a), however the reference of Elyasaf is silent regarding a first detection optics and a second detection optics.

The reference of Murakami teaches of a first detection optics and a second detection optics (7a/7b)(figs. 3 and 5)(col. 5, line 30-39). It would have been obvious to one having ordinary skill in the art at the time of invention to provide a first detection optics which leads the transmitted light separated by the space separation mechanism to the detector and a second detection optics which leads the reflected light separated by the space separation mechanism to the detector for the purpose of using multiple devices to detect reflected light and transmitted light simultaneously with accuracy.

Claims 3, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf et al. (6,930,770 B2) in view of Murakami et al. (5,017,798) and further in view of Nikoonahad et al. (6,919,957 B2)

Claims 3, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf in view of Murakami and further in view of Nikoonahad, as applied to claims above. The reference of Elyasaf and Murakami teaches of the features of claims 2, 10 and 18. The reference of Elyasaf and Murakami is silent regarding the use of the first detection optics and the second detection optics to change a magnification for an observed image and change an illumination area of the illumination optics in accordance with the magnification thereof. The use of detection optics to change a magnification for an observed image is known as evident by Nikoonahad et al. (col. 160, claim 86). It would have been obvious to one having ordinary skill in the art at the time of invention to provide detection optics that change a magnification for an observed image for the purpose of detecting and determining a critical dimension of a micro defects or a macro defects on a front side of the specimen with accuracy.

Claims 7, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elyasaf, as applied to claims 1 and 9 above. The reference of Elyasaf teaches of the features of claims 1, 9 and 17, comprising supporting stage (60) that translate object (col. 4, line 66-col. 5, line 1-2) and sensors (32/34)(fig. 1a). The reference of Elyasaf is silent regarding an XY stage on which the substrate is mounted and the type of sensor used as a detection sensor being (i.e. TDI sensor) and that number of accumulation steps of the TDI sensor for the transmitted-light-based inspection is different from that of the accumulation steps of the TDI sensor for the

reflected-light-based inspection. There is no reason for the number accumulation steps of the sensor (i.e. TDI sensor) for the transmitted-light-based inspection and the accumulation steps of the sensor (i.e. TDI sensor) for the reflected-light-based inspection to be the same since they are independent of each other. The use of an XY stage on which the substrate is mounted to obtain a pattern image and a sensor (i.e. TDI sensor) is known as evident by Maeda et al. (6,556,290 B2)(fig. 3). It would have been obvious to one having ordinary skill in the art at the time of invention to provide an XY stage on which the substrate mounted and the number of accumulation steps of the TDI sensor for the transmitted-light-based inspection that is different from that of the accumulation steps of the TDI sensor for the reflected-light-based inspection for the purpose scanning, aligning and measuring with accuracy.

Allowable Subject Matter

Claims 5 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 5, the prior art of record, taken alone or in combination, fails to disclose or render obvious the illumination optics has a polarizing beam splitter provided between the space separation mechanism and the detector, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism to lead the reflected light to the detector

As to claim 13, the prior art of record, taken alone or in combination, fails to disclose or render obvious the second illumination optics has a polarizing beam splitter provided between the space separation mechanism and the second detection sensor, and the polarizing beam splitter transmits or reflects the second inspection light to lead the second inspection light to the space separation mechanism, and reflects or lets through the reflected light from the substrate obtained via the space separation mechanism lead the reflected light to the second detection Sensor.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art pattern inspection apparatus to inspect defects of a substrate that may anticipate or obviate the claims of the applicant's invention.

Response to Arguments

Applicant's arguments/remarks, see pages 9-11, filed 15 February 2007, with respect to the rejection(s) of claim(s) 1-3, 6-8, 10-11 and 14-16 and under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of claim amendment.

Conclusion

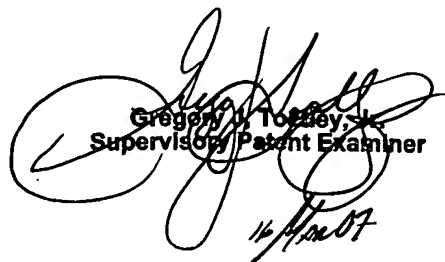
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
March 6, 2007


Gregory J. Toatley, Jr.
Supervisor Patent Examiner
16 Mar 07